Injury Frequency Associated with Motorcycle Crashes

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Overview

- Severity Scoring
- Injury Types by Body Area
- Matching Mechanism to injury
- Mandatory Implementation of Single Protective Device: Helmet

* Maryland Trauma Registry Calendar year 2005

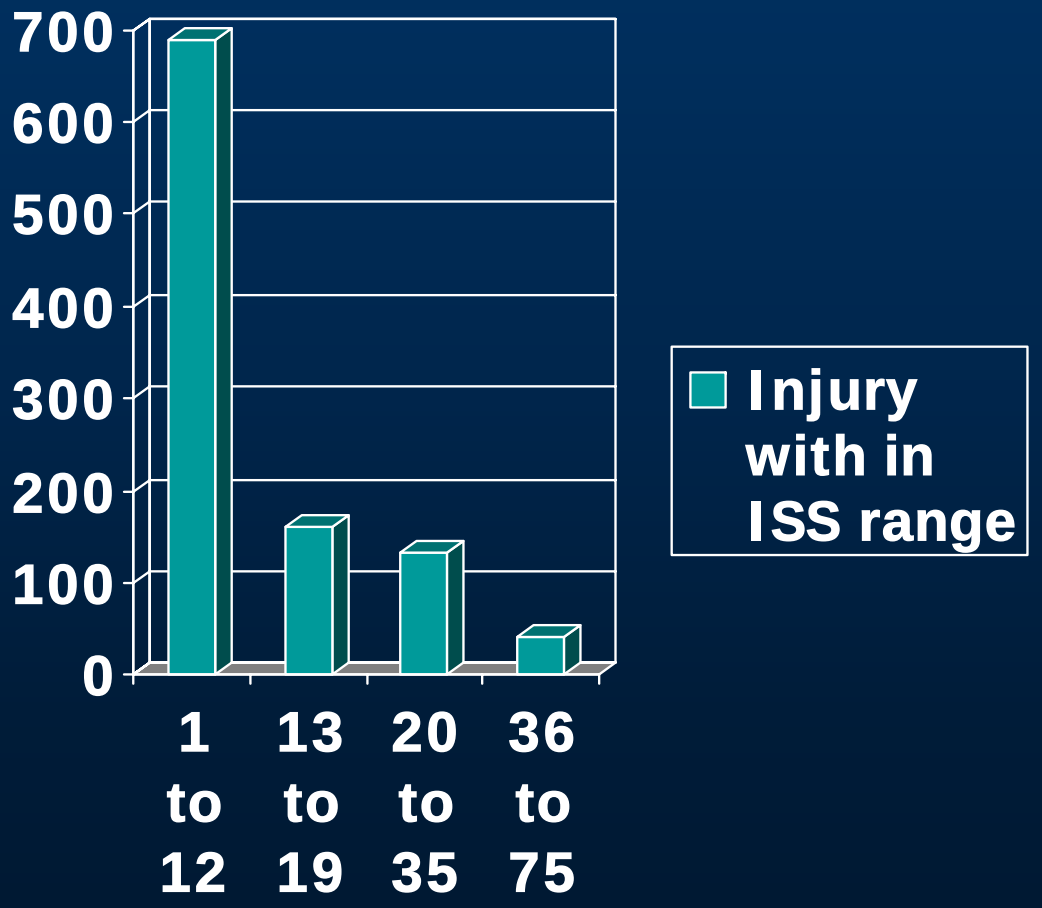
Injury Severity Score (ISS)

Baker 1974

- Injury Severity Score makes possible a valid numerical description of the overall severity of injury in persons who have sustained injury to more than one area of he body
- Designed for In- Hospital determination of Probability of Mortality
- Based on assessment of known anatomical injuries
- Autopsy specific data.

Maryland Trauma Registry Data

- Out of the 1064 MC victims entering Maryland's Trauma System, Majority are in the "low acuity" 1-12 ISS



Length of Stay
Surrogate for Severity

Length of Stay (days)	<1	1	2-3	4-7	8-14	15-21	22-28	>28	total	Average LOS
#	21	485	214	197	84	30	12	21	1064	4.4

Matching Mechanism to Injury

- Abrasions/ Contusions
- Head and Brain Injury
- Flexion/ Extension and Axial Loading: Spine Injury
- Straddle: Pelvic Fractures

Protective Devices of Those Entering Trauma Centers

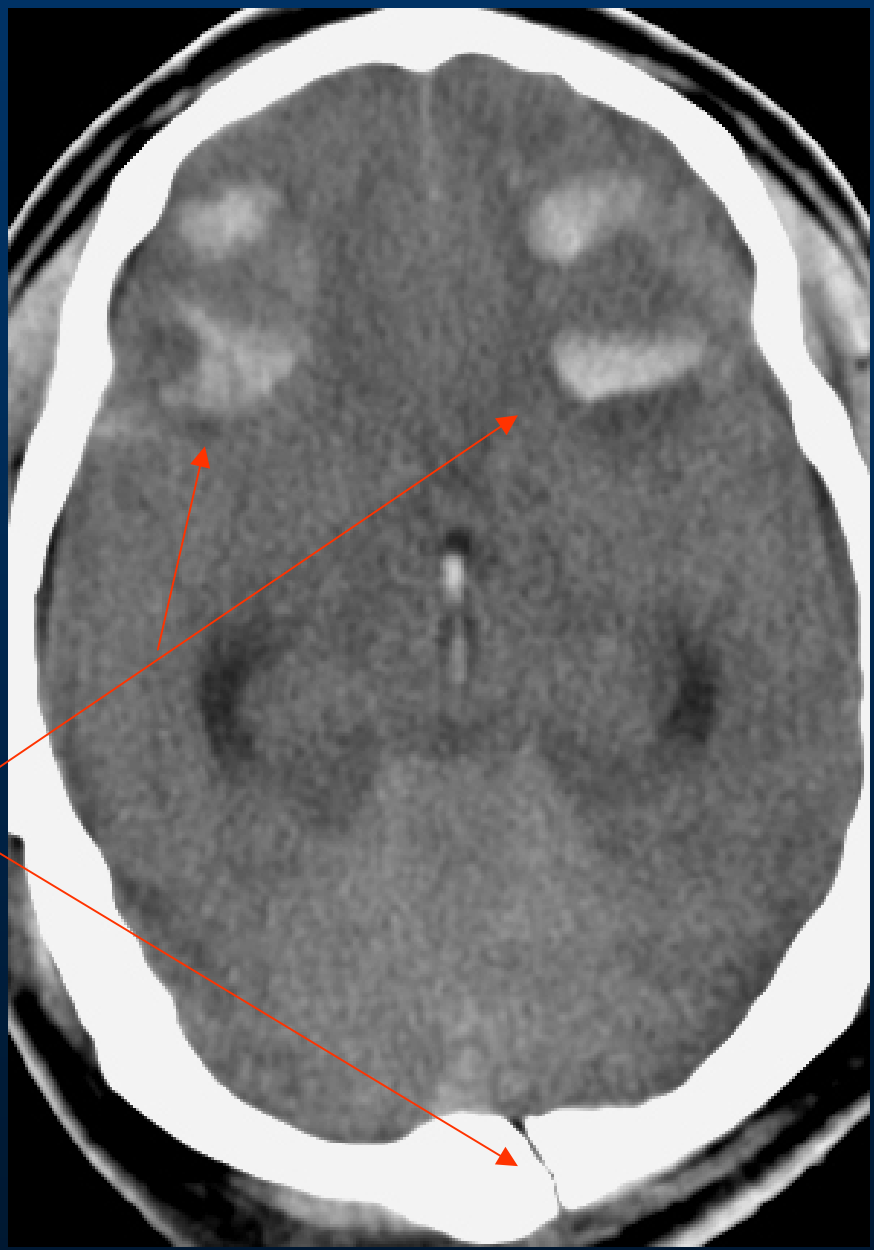
Protective Devices	Number	Percentage
None	205	19
Protective Helmet	745	70
Padding/ Protective Clothing	4	0.4
Other Protective Device	2	0.2
Not Valued	108	10
Total	1064	

Injury Frequency by Body Area

Injury	# Patients Out of 1064	Percent
Head Injuries **All types	428	40.2
Rib Fractures	165	15.5
Tibia/Fibula Fractures	154	14.5
Thoracic Organ Injuries	126	11.8

These are not mutually exclusive –
Patient could have more than one injury type

Occipital Fracture with Contrecoup Cerebral Contusions Hemorrhage



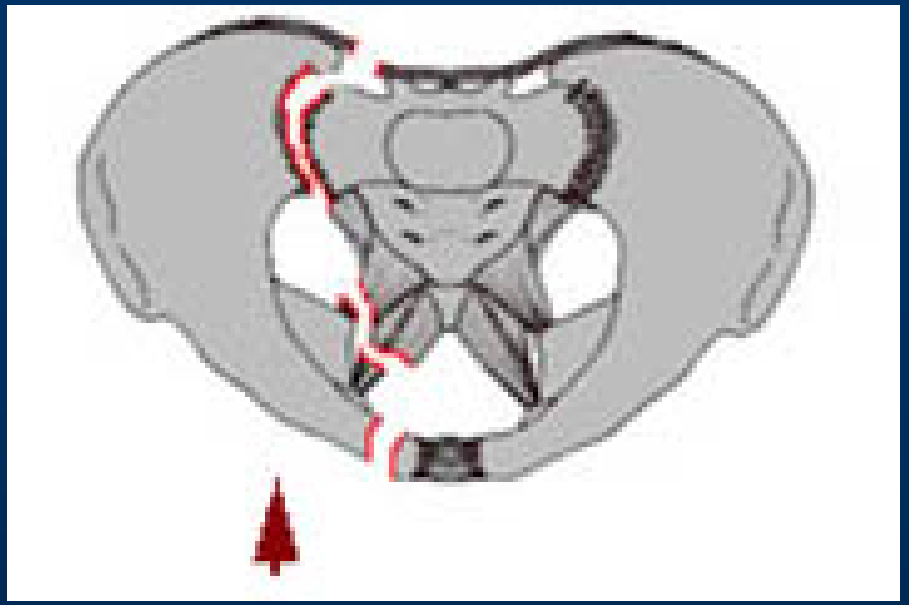
Injury Frequency by Body Area

Hemo/Pneumothorax	123	11.6
Abdominal organ injuries	118	11.1
Facial fractures	107	10.1
Pelvis and hip fractures	106	10.0
Forearm fractures	105	9.9
Femur fractures	99	9.3

These are not mutually exclusive –
Patient could have more than one injury type

Straddle Injury Pattern:

Pelvis fractures “open book”



Injury Frequency by Body Area

**Head Injuries with Hemorrhages	87	8.2
**Skull Fractures	85	8.0
Hand and Wrist Fractures	74	7.0
Lumbar Spine Injuries	61	5.7
Thoracic Spine Injuries	52	4.9
Humerus Fractures	52	4.9

These are not mutually exclusive –
Patient could have more than one injury type

Injury Frequency by Body Area

Cervical Spine Injuries	50	4.7
Shoulder Dislocations	32	3.0
Knee Dislocations	15	1.4
Flail Chest	8	0.8
Elbow Dislocations	7	0.7
Fractures to Sternum	7	0.7
Injuries to Thoracic Aorta	5	0.5

These are not mutually exclusive –
Patient could have more than one injury type

Helmet Usage and Fatality Reduction

- Helmet Use Increased
  - Pre-law 24.6%
  - Post-law 80.5%
- Number of fatalities decreased by 36.9% (1996)

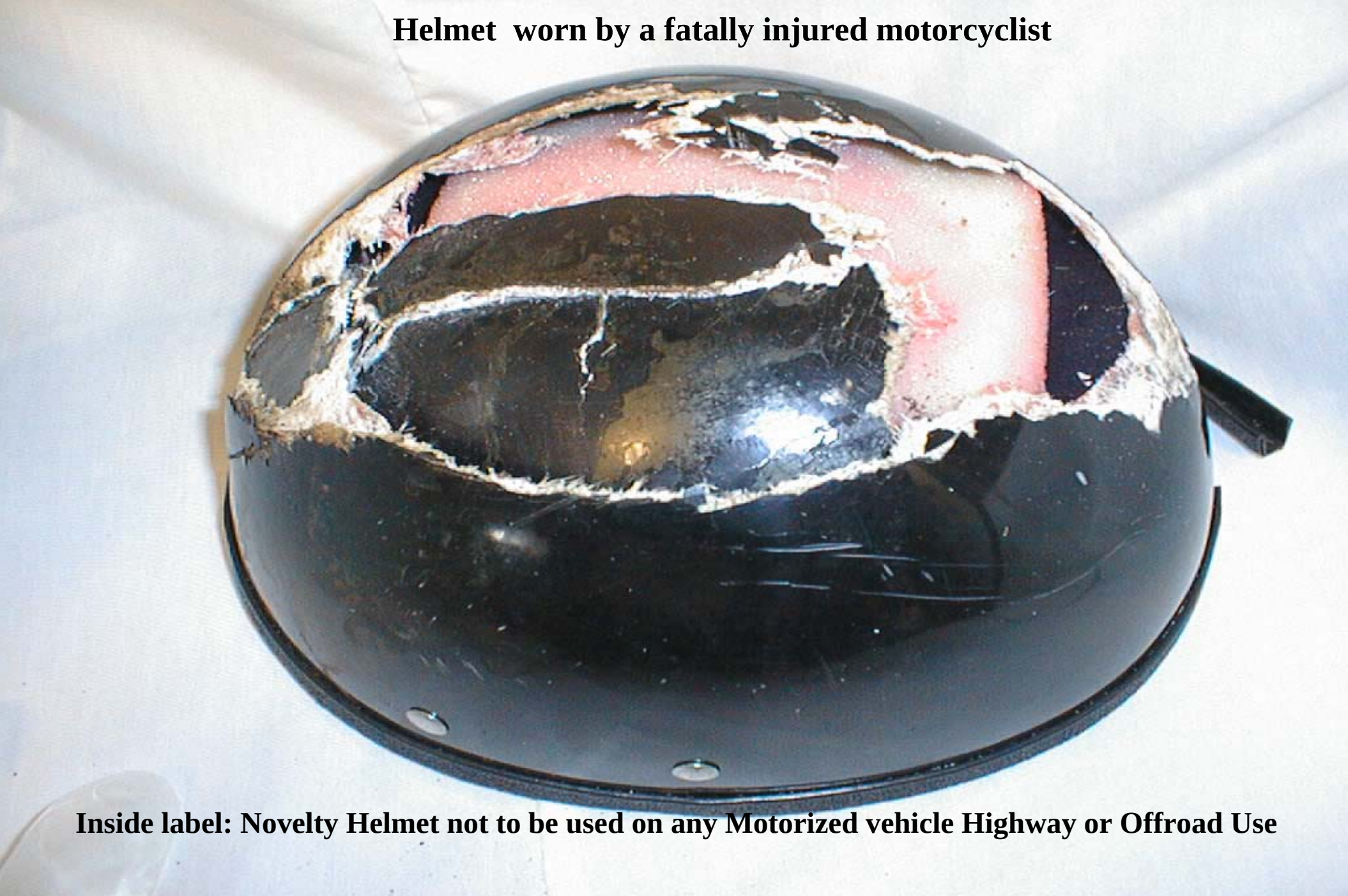
Major Brain Injury
R A Cowley Shock Trauma

	MC crash Admits	Helmet Used	Helmet Not Used	Unk	Major Brain Helmet Used	Major Brain No Helmet
1992	216	56	118	42	2%	19%
2004	327	242	57	27	14.9%	26.3%

1992 year Mandatory Helmet law went into effect.

In 2001 4.4% died with Helmets, 12.5% died without Helmets.

Helmet worn by a fatally injured motorcyclist



Inside label: Novelty Helmet not to be used on any Motorized vehicle Highway or Offroad Use